



# BADGER LABORATORIES & ENGINEERING INC.

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THILMANY LLC  
Lime Kiln Emission Test  
at  
Kaukauna, WI

August 17, 2010  
P.O.# 95627 OS

Prepared by:

BADGER LABORATORIES & ENGINEERING  
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September 1, 2010

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## **Thilmany, LLC - Lime Kiln Emission Test**

### **I. Introduction**

Badger Laboratories & Engineering Co., Inc. (BL&E) was retained by Thilmany, LLC (Thilmany) to conduct Particulate Emission Compliance Tests on the discharge of the Lime Kiln process (P12, S12). The source is installed at the facility, located at 600 Thilmany Road, Kaukauna, WI.

The on-site portion of the emission test was conducted August 17, 2010 by Bruce Lamers and Matt Vissers of BL&E. Coordination between testing activities and plant operation was provided by Mr. Tom Jayne of Thilmany. The testing was not witnessed by any representative from the Wisconsin Department of Natural Resources (WDNR).

Particulate emission testing was performed following U.S. EPA Methods 1-5 and 202. Testing was performed to demonstrate compliance with the MACT II emission limitation of 0.13 gr/dscf corrected to 10% Oxygen while the Lime Kiln was being fired with fuel oil and 13.8 pounds per hour total particulate.

A summary of the emission results is shown on the next page. A more detailed breakdown along with field data and other supporting documentation is contained in the Appendix.

### **Contact Information**

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## II. Summary of Results

### Particulate Emission Results

8/17/10

<u>Test Run</u>	<u>Volumetric Flow Rate dscfm</u>	<u>Isokinetic Ratio, %</u>	<u>Particulate Emission gr./dscf Corr. to 10% O<sub>2</sub></u>	<u>Total, lbs./hr</u>
1	8,654	104.1	0.090	9.20
2	8,820	99.7	0.092	9.75
3	9,334	96.3	0.088	8.10
<b>Average</b>	<b>8,936</b>		<b>0.090</b>	<b>9.02</b>
State lbs./hr Limitation				13.8
MACT II Limitation				0.13

Formula for correcting to 10% Oxygen.

$$C_s 10\% = \frac{11}{21 - \%O_2} C_s$$

## III. Process Description

The stack (S12) carries exhaust gases from the Lime Kiln process (P12). During the test the Lime Kiln was operating at 220 tons per day feed rate. Cyclones, an Ahlstrom wet scrubber and Turbotek scrubber nozzles are used for emission control. Lime Kiln Production data and control equipment data supplied by Thilmany personnel is contained in the Appendix. Any additional data can be obtained from Thilmany personnel.

## IV. Comments

The testing on August 17, 2010 proceeded normally with no problems that we were aware of. To the best of our knowledge the test's results are accurate and reflect the process emissions during the test period. All leak checks and isokinetic sampling rates were within method tolerances.

A slight adjustment downward was made to the moisture content of the stack gases on runs one and two based on saturated conditions at the average stack gas temperature as described in Method 4.

**THILMANY LIME KILN PM EMISSION TEST -- PROCESS AND SCRUBBER DATA**  
**AUGUST 17, 2010**

	Start Time	End Time	Lime Mud Feed Rate CaCO <sub>3</sub> ; TPD <small>kin-qtc_1063.pv</small>	Lime Production Rate CaO; TPD	Ahlstrom Scrubber Water Flow GPM <small>kin-hi_1098.pv</small>	Ahlstrom Scrubber Water Pressure PSIG <small>kin-pi_1097.pv</small>	Turbotak Scrubber Water Flow GPM <small>kin-hi_1201.pv</small>	Turbotak Scrubber Air Pressure PSIG <small>kin-pi_1088.pv</small>	No. 6 Oil Flow GPM <small>kin-rfc_1083.pv</small>	Lime Production Rate CaO; TPH
Run 1	8/17/2010 8:52	8/17/2010 9:53	219.8	115.8	313.9	292.4	48.88	102.73	3.62	4.83
Run 2	8/17/2010 10:10	8/17/2010 11:11	219.9	115.8	313.8	292.4	48.89	102.83	3.62	4.83
Run 3	8/17/2010 11:27	8/17/2010 12:28	220.0	115.9	314.2	292.4	48.92	102.79	3.62	4.83
	AVERAGE		219.9	115.9	314.0	292.4	48.9	102.8	3.62	4.83